

ZILONG WANG

<https://www.linkedin.com/in/wangzilong/>

950 Marietta Street NW 2101, Atlanta, GA 30318-5737, USA

(+1) 404-406-4699 ◊ zwang937@gatech.edu ◊ wangzilongri@gmail.com

EDUCATION

Georgia Institute of Technology, Atlanta, GA, USA

PhD in Operations Research

Thesis: Applications of Optimization and Causal Inference

Advisor: Prof Turgay Ayer

August 2018 - Present

GPA: 3.82

Cornell University, Ithaca, NY, USA

Bachelor of Science, Operations Research & Computer Science.

August 2014 - May 2017

GPA: 3.85

PUBLICATIONS

Small Area Estimation of Case Growths for Timely COVID-19 Outbreak Detection

Operations Research (1st Round Major Revision)

Estimating County-Level COVID-19 Exponential Growth Rates Using Generalized Random Forests

NeurIPS 2020 ML4H, October 2020

<https://covid19sim.org/>

Estimating Heterogeneous Treatment Effects via Modern Integer Programming Methods

Working Paper

Decomposition Methods for Software Defined Networking

Working Paper

INDUSTRY COLLABORATIONS

Google, USA

Software Engineer, Datacenter and Network Interfacing

August 2022 - November 2022

- ◊ Researched performance improvements for **SCIP** integer program solver for datacenter fabric rewiring
- ◊ Developed primal heuristics that spedup network topology solver by 650% with no loss of optimality
- ◊ Deployed validator verifying outputs of solver fulfil robustness and reliability requirements in **C++**
- ◊ Proved production code incorrectly dismisses correct solver outputs and deployed bug fix

Adobe, USA

Machine Learning Engineer, Media and Advertising Solutions

May 2022 - August 2022

- ◊ Extended prediction horizon for churn prediction from 90 to 180 days
- ◊ Refined granularity of user risk profiling and churn time predictions from monthly to daily level
- ◊ Achieved competitive predictive performance with C-Index of 0.73 and Integrated Brier Score of 0.05
- ◊ Improved training times from 72 hours to 20 minutes on **Databricks**

Amazon, USA

Data Scientist, Amazon Care

May 2021 - August 2021

- ◊ Developed real-time SARIMAX based surge predictor with AUC 0.92 for tele-health visits
- ◊ Implemented real-time wait time estimation module for patients in queue within 5 seconds of accuracy
- ◊ Delivered **SimPy** simulation framework for staffing and capacity planning up to 6 months ahead

Institute of High Performance Computing, Singapore

Lead Machine Learning Engineer

June 2017 - August 2018

- ◊ Built **eko.ai** healthcare startup's doppler echocardiogram's computer vision framework
- ◊ Improved accuracy of traditional signal detection based tools using **sklearn** and **keras**
- ◊ Parallelized and increased throughput of tool's pipeline in **BASH** and **SQL**

Research Engineer

2017 - 2018

◇ Implemented Retinal Tomographs (OCT) classification pipeline with **keras** and **opencv**

Bioinformatics Institute, Singapore

Summer 2016

Research Engineer

Computer Vision. Graphics Rendering.

◇ Implemented graphics rendering of LSTM prediction of mice bone structure from video clips

KEY PROJECTS

COVID-19 Outbreak Detection Tool

September 2020

<https://covid19sim.org/>

Developer

◇ Implemented open source dataset pipeline backend in **R**

◇ Econometric methodology and ML routines implemented and tested in **Python** and **Gurobi**

◇ Tool received media coverage and attracted additional collaborators

◇ Presented work in NeurIPS 2020 ML4H workshop

Eko.ai Pulsed Wave Doppler Detection Tool

January 2018

<https://www.ekohealth.com/>

Lead Machine Learning Engineer

◇ In charge of directly communicating technical progress to startup's chief radiologist, CTO, and CEO

◇ Improved accuracy of traditional signal detection based tools using **sklearn** and **keras**

◇ Parallelized and increased throughput of tool's pipeline in **BASH** and **SQL**

AWARDS AND FELLOWSHIPS

National Science Scholarship (PhD)

2018 - 2023

Agency for Science, Technology and Research, Singapore

◇ Fully funded fellowship for PhD studies

National Science Scholarship (BS)

2014 - 2017

Agency for Science, Technology and Research, Singapore

◇ Fully funded fellowship for undergraduate studies

INVITED TALKS AND POSTER SESSIONS

NeurIPS 2020 ML4H Workshop Poster Session

November 2020

Estimating County-Level COVID-19 Exponential Growth Rates Using Generalized Random Forests

Virtual INFORMS Annual Meeting 2020

October 2020

Estimating County-Level COVID-19 Exponential Growth Rates Using Generalized Random Forests

INFORMS Annual Meeting 2021

October 2021

Estimating Heterogeneous Treatment Effects with Modern Mixed Integer Programming Methods

MSOM Annual Meeting 2022

June 2022

Small Area Estimation of Case Growths for Timely COVID-19 Outbreak Detection

INFORMS Annual Meeting 2022

October 2022

Small Area Estimation of Case Growths for Timely COVID-19 Outbreak Detection

TEACHING EXPERIENCE

Teaching Assistant: ORIE 4580 (MCMC & Simulations)

Fall 2016

Operations Research and Information Engineering, Cornell University

◇ Undergraduate core course

SKILLS AND ACTIVITIES

Programming Languages:	Python, R, MATLAB, BASH, C++
Optimization and Modelling:	CPLEX, Gurobi, SCIP, SimPy
Machine Learning Packages:	Keras, scikit-learn, pysurvival
Database:	MySQL, Databricks, Apache Spark